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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/812,021      | 03/19/2001  | Margrit Betke        | MGH-010AUS          | 9308             |

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EXAMINER

AZARIAN, SEYED H

ART UNIT PAPER NUMBER

2625

DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/812,021

Applicant(s)

BETKE ET AL.

Examiner

Seyed Azarian

Art Unit

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4,5. 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

**Claim Rejections - 35 USC § 102**

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1-2, are rejected under 35 U.S.C. 102(e) as being anticipated by Xu et al (U.S. patent 6,363,163).

Regarding claim 1, Xu discloses method and system for the automated temporal subtraction of medical image comprising;

a) processing a plurality of CT lung images, each composed of lung image data, taken from a patient in one CT study (Fig. 3, column 5, lines 49-64 the CT images having a plurality of pixels of gray levels of the lungs);

b) relating said plurality of CT lung images taken from a patient in one CT study with a plurality of CT lung images taken from the same patient in another study to detect changes in a nodule within the CT images of the lung (column 11, lines 10-18 detecting the changes in tumor or nodules size).

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Regarding claim 2, Xu discloses method wherein the step of relating said plurality of CT lung images taken from a patient one CT study with a plurality of CT lung images taken from the same patient in another study comprises the steps of (Fig. 2A and 2B, column 3, lines 64-67, previous and current CT examination of the same patient);

a) automatically registering a plurality of CT images from a first study with CT images from a second study (column 7, lines 35-52, images in the two scans are registered);

b) automatically cross matching nodules between CT lung image data from the first and second study (column 6, lines 54-67, and comparison of the best match between previous and current scanning);

c) calculating the volume change of each previously identified nodal feature by automatically comparing the computed volume,  $V$ , of a nodule from the first study with the computed volume,  $V$ , of the same nodule from the second study (column 11, lines 10-18, registration and subtraction (refer to calculation) of changes to in tumor size).

### **Claim Rejections - 35 USC § 103**

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 3, is rejected under 35 U.S.C. 103(a) as being unpatentable over Xu et al (U.S. patent 6,363,163) as applied to claims 1, 2 and further in view of Giger et al (U.S. patent 5,974,165).

Regarding claim 3, Xu discloses method wherein the step of automatically registering the plurality of CT images study comprises the steps of;

a) identifying the vertical position of a first CT image (column 5, lines 49-64, determining horizontal, vertical, upper and lower side of lung);

b) matching the vertical position of the first CT image with an image from the second CT study (column 6, lines 54-67, comparison of the best match between previous and current scanning);

However Xu fails to disclose "aligning the individual part of lungs". On the other hand Giger teaches radiographic image in order to align the lung apices (in the Y-direction) and the mediastinum (in the X-direction) using the parameters (Fig. 15, column 8, lines 6-10).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify aligning the lung in Xu invention according to the teaching of Giger because it provides scaling and registration of the contours based on location of lung apices that would be beneficial for the radiologist to be able to more accurately determine defected area and provide better result and reliability.

***Other prior art cited***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. patent (5,715,166) to Besl et al is cited for apparatus for the registration of three-dimensional shapes.

U.S. patent (5,779,534) to Kunec is cited for multiple stage airflow diffuser apparatus for paint booth.

U.S. patent (5,999,840) to Grimson et al is cited for system and method of registration of three-dimensional data sets.

U.S. patent (5,185,809) to Kennedy et al is cited for morphometric analysis of anatomical tomographic data.

U.S. patent (4,873,626) to Gifford is cited for parallel processing system with processor array having memory system included in system memory.

**Contact Information**

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seyed Azarian whose telephone number is (703) 306-5907.

The examiner can normally be reached on Monday through Thursday from 6:00 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta, can be reached at (703) 308-5246.

**Any response to this action should be mailed to:**

Assistant Commissioner for Patents  
Washington, D.C. 20231

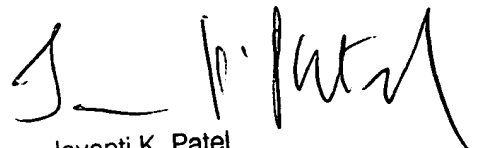
**Or faxed to:**

(703) 872-9306, ("draft" or "informal" communications should be clearly labeled to expedite delivery to examiner).

**Hand delivered responses** should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to T.C. customer service office whose telephone number is (703) 306-0377.

Seyed Azarian  
Patent Examiner  
Group Art Unit 2625  
January 11, 2004

  
Jayanti K. Patel  
Primary Examiner

